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Subject: Applications in GC Analysis



APPLICATIONS IN GC ANALYSIS



QuEChERS Dispersive Solid Phase Extraction for the GC/MS Analysis of Pesticides in Cucumber
QuEChERS dispersive SPE is a simple, fast and quantitative sample preparation method. This application demonstrates the effectiveness of this technique in the GC/MS analysis of pesticides in cucumber, using a Thermo Scientific TraceGOLD TG-5MS GC column for analysis. The recoveries for the spiked pesticides in cucumber matrix at 50 ng/g were between 75.2 to 119.6% with relative standard deviations ranging from 2.1 to 8.9% using the QuEChERS method described in EN15662.

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The Analysis of Glycerin and Glycerides (ASTM D6584)

Biodiesel is routinely used to supplement petroleum diesel due to the high cost of crude oil. Several ASTM specifications exist and biodiesels must conform to these in order to be sold commercially. ASTM D6584 is a method that focuses on the free glycerin and glyceride concentration. These are important because they can cause engine damage so need to be removed before use. Biodiesel is not typically used pure, instead it is blended with petroleum diesel. Diesel uses a nomenclature Bxx where xx indicates the percentage of biodiesel added. For example B100 would contain 100% biodiesel and B50 would contain 50% biodiesel and 50% petroleum diesel.

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GC Analysis of Acylated Sugars

Sugars must be derivatized to a volatile form so as to be analyzed by GC. A commonly used derivatization reagent, N-Methyl-bis (trifluoroacetamide) (MBTFA) was used for converting sugars to their volatile forms. In order to achieve separation of TFA sugar derivatives such as fructose and glucose anomers, a mid-polar 14% cyanopropylphenyl polysiloxane phase GC column was used.

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GC Analysis of Derivatized Amino Acids

Amino acids such as L-alanine, L-leucine and L-lysine are very difficult to analyse by GC as they decompose in the injector port and decompose on the column. The highly polar amino acid moiety, aids their solubility in water, but not in organic solvents which reduces the efficiency of their detection. To overcome these problems the amino acids can be derivatized to remove the active hydrogens and improve detectability. One of the most commonly used derivatization methods for the analysis of amino acids is a silylation reaction.

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GC Analysis of Derivatized Chlorinated Acetic Acids

Chloroacetic acid (CA), Dichloroacetic acid (DCA) and Trichloroacetic acid (TCA) are difficult to analyze by GC due to highly polar acidic groups and therefore must be derivatized to increase their detectability. This application note demonstrates derivatization is achieved using the alkylation reagent pentafluorobenzyl bromide (PFBB^r) to form their corresponding fluorinated derivatives. Separation of the derivatized chlorinated acetic acids with highly symmetrical peak shapes was achieved using a 5% phenyl methylpolysiloxane phase column.

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Comparison of Thermo Scientific TraceGOLD TG-WaxMT and Thermo Scientific TraceGOLD TG-WaxMS Columns Using a Standard Test Mix

In high throughput laboratories, column lifetime is of importance not only due to cost, but also for the associated instrument downtime when frequently replacing columns. Conventional fused silica columns may become brittle as a consequence of continuous temperature cycling. The TraceGOLDTM TG-WAXMT metal GC column is more mechanically durable and robust with an increased column lifetime due to its metal support. This gives an added advantage for high throughput laboratories as the metal columns can better withstand the stress of elevated temperatures and repeated thermal cycling.

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Gas Chromatography Liner Selection Guide

The liner serves an important function in allowing a sample which is injected in the liquid phase to pass into

the gaseous phase and onto the GC column. Choosing the most suitable liner from the wide selection available can be confusing. However, with an understanding of how a liner performs its function this selection process can be simplified, ensuring peak shape and method robustness are optimized. [click for full PDF>>](#)



Gas Chromatography Syringe Selection Guide
Choosing the correct syringe from the wide selection available can be a difficult task, however with a little more information this process can be simplified. The syringe plays a pivotal role in the GC system as it takes the sample from the vial and introduces it into the inlet. There is a lot of scope for error when selecting the correct syringe due to a wide range of inlets from different manufacturers and also the wide range of autosampling devices. [click for full PDF>>](#)



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